

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of Invention	METHOD AND STRUCTURE FOR IMPROVING CMOS DEVICE RELIABILITY USING COMBINATIONS OF INSULATING MATERIALS
---------------------------	---

Application Number :

Confirmation Number:

First Named Applicant: Haining Yang

Attorney Docket Number: FIS920040194US1

Art Unit:

Examiner:

Search string: (5851893 or 6724053).pn

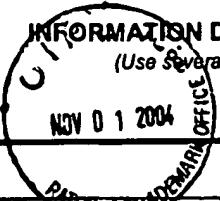
US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
JMJ	1	5851893	1998-12-22	Gardner et al.		438	305
JMJ	2	6724053	2004-04-20	Divakaruni et al		257	402

Signature

Examiner Name	Date
T. M. Thomas	10-31-05

INFORMATION DISCLOSURE CITATION <small>(Use several sheets if necessary)</small>			ATTY DOCKET NO. FIS920040194US1	APPLICATION NO. 10/711,897	
			YANG ET AL.		
			FILING 10-12-04	GROUP ART 2822	
U.S. PATENT DOCUMENTS					
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS
U.S. PATENT APPLICATION PUBLICATIONS					
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS
FOREIGN PATENT DOCUMENTS					
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)					
1 <i>JMJ</i>	1	T. G. Gerence et al., "The Combined Effects of Deuterium Anneals and Deureated Barrier-Nitride Processing on Hot-Electron Degradation in MOSFET's;" IEEE Transactions of Electron Devices, Vol. 46, No. 4, April 1999; pages 747 - 753.			
2 <i>JMJ</i>	2	J. H Stathis; "Reliability limits for the gate insulator in CMOS technology;" IBM J. Res & Dev. Vol. 46 No. 2/3 March/May 2002; pages 265 - 286.			
EXAMINER <i>T. M. Thomas</i>			DATE CONSIDERED 10-31-05		
<small>*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</small>					

Sheet 1 of 3

FORM PTO 1449 (REV 2-32)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	File No. FIS920040194US1	Serial No. 10/711,897
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		Applicant(s): Haining Yang et al.	
		Filing Date: 10/12/2004	Group: 2811 2822

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JM	4,851,370	07/25/1989	Deklan et al.	437	225	12/28/1987
	5,506,169	04/09/1996	Guldi	437	70	10/20/1994
	5,538,916	07/23/1996	Kuroi et al.	437	72	04/20/1994
	5,580,615	12/03/1996	Hsu et al.	437	69	02/22/1994
	5,620,919	04/15/1997	Godinho et al.	438	230	03/30/1995
	5,633,552	05/27/1997	Lee et al.	310	311	07/10/1994
	5,668,403	09/16/1997	Kunikiyo	257	639	09/03/1996
	5,707,889	01/13/1998	Hsu et al.	437	69	05/13/1996
	5,891,798	04/06/1999	Doyle et al.	438	624	12/20/1996
	5,908,312	06/01/1999	Cheung et al.	438	287	05/28/1997
JM	5,985,737	11/16/1999	Wu	438	448	03/04/1998

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Patents, etc.)

Examiner	Date considered
T. M. Thomas	10-31-05

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Sheet 2 of 3

FORM PTO 1449 (REV 2-32)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		File No. PIS920040194US1	Serial No. 10/711,897
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		Applicant(s): Haining Yang et al.			
		Filing Date: 10/12/2004	Group: 201 2822		

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JM	12	5,633,202	05/27/1997	Brigham et al.	438	763	06/06/1996
	13	5,847,463	12/08/1998	Trivedi et al.	257	751	08/22/1997
	14	6,040,619	03/21/2000	Wang et al.	257	649	09/25/1997
	15	6,046,494	04/04/2000	Brigham et al.	257	640	01/31/1997
	16	6,146,975	11/14/2000	Kuehne et al.	438	437	07/10/1998
	17	6,214,733 B1	04/10/2001	Sickmiller	438	691	11/17/1999
	18	6,228,777 B1	05/08/2001	Arafa et al.	438	740	06/08/1999
	19	6,261,924 B1	07/17/2001	Mandelman et al.	438	430	01/21/2000
JM	20	6,306,742 B1	10/23/2001	Doyle et al.	438	591	01/05/1999
	21	6,395,610 B1	05/28/2002	Roy et al.	438	354	06/20/2000

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Patents, etc.)

Examiner	Date considered
T. M. Thomas	10-31-05

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Sheet 3 of 3

FORM PTO 1449 (REV 2-32)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		File No. FIS920040194US1	Serial No. 10/711,897
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		Applicant(s): Haining Yang et al.			
		Filing Date: 10/12/2004	Group: 2811 2822		

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
TMJ	6,436,848 B1	08/20/2002	Ramkumar	438	777	03/30/1999
	6,476,462 B2	11/05/2002	Shimizu et al.	257	627	12/07/2000
	6,509,230 B1	01/21/2003	Roy et al.	438	261	06/20/2000
	6,515,351 B2	02/04/2003	Arafa et al.	257	644	02/28/2001
	6,573,172 B1	06/03/2003	En et al.	438	626	09/16/2002
	6,825,529 B2	11/30/2004	Chidambaram et al.	257	336	12/12/2002

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Patents, etc.)

Examiner	Date considered
T. M. Thomas	10-31-05

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

APR 14 2005

Sheet 1 of 5

FORM PTO 1449
(REV 2-32)U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

File No.
FIS920040194US1Serial No.
10/711,897

Applicant(s):

HAINING YANG, ET AL.

Filing Date:
10-12-04Group:
2892

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
1	4,851,370	07/25/1989	Dokken et al.	437	225	12/28/1987
2	5,506,169	04/09/1996	Galdi	437	70	10/20/1994
3	5,538,916	07/23/1996	Kumar et al.	437	72	04/20/1994
4	5,580,815	12/03/1996	Hsu et al.	437	69	02/22/1994
5	5,620,919	04/15/1997	Gedimbo et al.	438	230	03/30/1995
6	5,633,552	05/27/1997	Lee et al.	310	911	07/10/1994
7	5,668,403	09/16/1997	Kumakiyo	257	639	09/03/1996
8	5,707,889	01/13/1998	Hsu et al.	437	69	05/13/1996
9	5,891,798	04/06/1999	Doyle et al.	438	624	12/20/1996
10	5,908,312	06/01/1999	Cheung et al.	438	287	05/28/1997
11	5,985,722	11/16/1999	Wu	438	448	03/04/1998

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Patents, etc.)

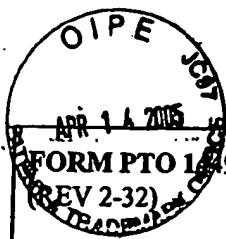
Examiner

T. M. Thomas

Date considered

10-31-05

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Sheet 2 of 5

FORM PTO 149
(REV 2-32)
TECHNICAL

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use several sheets if necessary)

File No.
FIS92004-0194US1

Serial No.
10/711,897

Applicant(s):
HAINING YANG, ET AL.

Filing Date:
10-12-04

Group:
2822

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
12	5,633,202	05/27/1997	Brigham et al.	438	703	06/06/1996
13	5,847,463	12/08/1998	Trivedi et al.	257	751	08/22/1997
14	5,851,893	12/22/1998	Gardner et al.	438	305	07/18/1997
15	6,040,619	03/21/2000	Wang et al.	257	649	09/25/1997
16	6,046,494	04/04/2000	Brigham et al.	257	640	01/31/1997
17	6,146,975	11/14/2000	Kuehne et al.	438	437	07/10/1998
18	6,214,723 B1	04/10/2001	Sickmiller	438	691	11/17/1999
19	6,228,777 B1	05/08/2001	Arafa et al.	438	740	06/08/1999
20	6,261,924 B1	07/17/2001	Mandelman et al.	438	430	01/21/2000
21	6,306,742 B1	10/23/2001	Doyle et al.	438	591	01/05/1999
22	6,395,610 B1	05/28/2002	Roy et al.	438	354	06/20/2000

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Patents, etc.)

Examiner	Date considered
T. M. Thomas	10-31-05

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO 1449 (REV 2-32)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		File No. FIS920040194US1	Serial No. 10/711,897	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)				Applicant(s): HAINING YANG, ET AL.		
				Filing Date: 10-12-04	Group: 2822	
U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
23	6,430,848 B1	08/20/2002	Ramkumar	438	777	03/30/1999
24	6,476,462 B2	11/03/2002	Shimizu et al.	257	627	12/07/2000
25	6,500,230 B1	01/21/2003	Roy et al.	438	261	06/20/2000
26	6,515,351 B2	02/04/2003	Arafa et al.	257	644	02/28/2001
27	6,573,172 B1	06/03/2003	En et al.	438	626	09/16/2003
28	6,724,053 B1	04/20/2004	Divakaruni et al.	257	402	02/23/2000
29	6,825,529 B2	11/30/2004	Chidambaram et al.	257	336	12/12/2002

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Patents, etc.)

Examiner <i>T. M. Thomas</i>	Date considered <i>10-31-05</i>
EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

INFORMATION DISCLOSURE CITATION <small>(Use several sheets if necessary)</small>			ATTY DOCKET NO. FIS920040194US1		APPLICATION NO. 10/711,897		
			HAINING YANG, ET AL.		FILING 10-12-04		GROUP ART 3822
U.S. PATENT DOCUMENTS							
*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
U.S. PATENT APPLICATION PUBLICATIONS							
*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
							YES
							NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	1	T. H. Ning, "Why BiCMOS and SOI BiCMOS?", IBM J. Res & Dev. Vol. 46 No. 2/3 March/May 2002; pages 181-186.					
	2	T. G. Berenc et al., "The Combined Effects of Ducterium Anneals and Ducterated Barrier-Nitride Processing on Hot-Electron Degradation in MOSFETs," IEEE Transactions of Electron Devices, Vol. 46, No. 4, April 1999; pages 747-763.					
EXAMINER			DATE CONSIDERED				
T. M. Thomas			10-31-05				
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

***EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.**

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)ATTY DOCKET NO.
FIS920040194US1APPLICATION NO.
10/711,897

HAINING YANG, ET AL.

FILING

10-12-04

GROUP ART

J822

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

U.S. PATENT APPLICATION PUBLICATIONS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

3 J. H. Statton, "Reliability limits for the gate-insulator in CMOS technology," IBM J. Res & Dev. Vol. 46 No. 2/3 March/May 2002, pages 265-286

EXAMINER

T. M. Thomas

DATE CONSIDERED

10-31-05

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.